



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,301	09/09/2003	Mark W. Lehnert	SXS-100-B	2135
7590 11/16/2005				
Thomas D. Heimholodt		EXAMINER		
Young & Basile, P.C.		CHUKWURAH, NATHANIEL C		
Suite 624		ART UNIT		
3001 West Big Beaver Road		3721		
Troy, MI 48084		PAPER NUMBER		

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

TWT

<b>Office Action Summary</b>	<b>Application No.</b> 10/658,301	<b>Applicant(s)</b> LEHNERT ET AL.	
	<b>Examiner</b> Nathaniel C. Chukwurah	<b>Art Unit</b> 3721	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-12, 14-28 and 30-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14, 16-28, 30, 32-39 and 41-48 is/are rejected.
- 7) ☒ Claim(s) 15, 31 and 40 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 12, 14, 17, 28, 30, 33-39, 41-42, 45 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKendrick (US 4,644,848) in view of Tambini et al. (US 5,592,396).

With regard to claim 1, McKendrick discloses an apparatus (10) for controlling an impact tool comprising: an inlet port (36), a fluid (compressed air) pressure regulator (16, 24) for maintaining a selectable pressure value (see col. 3, lines 53-68), a central processing unit (48 microprocessor) for receiving output signal from the sensor (42) for validating tightening process based solely on a monitored signature of fluid flow versus time in accordance with a program stored in the memory to control the flow of fluid to the tool (col. 4, lines 50-59).

McKendrick shows all claimed features but lacks a sensor for measuring corresponding flow of differential pressure; however, Tambini et al. teaches a torque monitoring system (20) having a sensor (36) generating an output signal to measure flow of at least one of differential pressure. Therefore, it would have been obvious to one skilled in the art to provide the apparatus of McKendrick with a sensor for measuring differential pressure in order to indicate when the condition of an impact tool changes (col. 6, line 3).

With regard to claim 12, McKendrick shows an output port (34) for supplying controlled fluid.

With regard to claim 17, McKendrick shows a method steps for receiving a supply of pressurized fluid through inlet port (36), maintaining a selectable pressure value with a fluid (compressed air) pressure regulator (16, 24) (see col. 3, lines 53-68), measuring a flow of differential pressure with a sensor (42)(see col. 4, lines 1-6), receiving output signal from the sensor (42) with a central processing unit (48 microprocessor) for validating tightening process based solely on a monitored signature of fluid flow versus time in accordance with a program stored in the memory to control the flow of fluid to the tool (col. 4, lines 50-59):

With regard to claim 28, McKendrick shows a method steps of supplying controlled fluid through an output port (34).

With regard to claims 14 and 30, McKendrick shows a method of providing pressurized compressed air.

With regard to claim 33, McKendrick discloses an apparatus (10) for controlling an impact tool comprising: an inlet port (36), a fluid (compressed air) pressure regulator (16, 24) for maintaining a selectable pressure value (see col. 3, lines 53-68), a sensor (42) for measuring a flow of differential pressure (see col. 4, lines 1-6), a central processing unit (48 microprocessor) for receiving output signal from the sensor (42) to validate tightening process and to control fluid to the tool without reference to the actual amount of torque applied to the fastener. See (col. 4, lines 50-59).

With regard to claim 34, McKendrick discloses an apparatus (10) for controlling an impact tool comprising: an inlet port (36) connectible to a supply of pressurized fluid;

Art Unit: 3721

means (16, 24) for monitoring fluid to tool and means (48) for analyzing the tool process and validating the process tool without reference to the actual amount of torque applied to the fastener. See (col. 4, lines 50-59).

With regard to claim 35, McKendrick shows means (central processing unit) for comparing fluid flow.

With regard to claims 36, 41 and 44, McKendrick shows at least one of differential pressure (col. 4, 1-6).

With regard to claim 37, McKendrick discloses an apparatus (10) for controlling an impact tool comprising: means (16, 24 pressure regulator) for monitoring fluid to tool, means (control system) for determining tool process validity.

With regard to claim 38, McKendrick shows central processor (48) for comparing monitored fluid flow.

With regard to claim 39, McKendrick shows at least one of differential pressure (see col. 4, lines 1-6).

With regard to claims 42 and 45, the modified McKendrick would include the central processing determining invalid process cycle, for example, "the process information regarding the tightening performance and determine an/or report the probable causes of the inferred process condition". See (col. 12, lines 63-66).

With regard to claims 47 and 48, the central processing unit (48 microprocessor) validates tightening process based solely on a monitored signature of fluid flow versus time. See (col. 4, lines 50-59).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 4, 6, 7, 9, 18, 20, 22-25, 43 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKendrick in view of Tambini et al. as applied to claims 1 and 17 and further in view of Lysaght (US 6,055,484).

With regard to claims 2, 8 and 18, the modified McKendrick is silent about setup process for each fastener tightening cycle to be learned.

Lysaght teaches such setup process for each fastener tightening cycle to be learned (see abstract).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to provide the program of McKendrick with setup process as taught by Lysaght for each fastener tightening cycle to be learned in order to determine when the output pressure precisely corresponds with the desired output pressure which has been called for by the computerized control (col. 2, lines 34-37).

With regard to claim 4, the modified McKendrick does not expressly state that the central processing unit receives a torque value input by a manual torque wrench.

McKendrick teaches manual pressure regulator (28) for initially reducing the pressure of fluid applied to the inlet the transducer, therefore, McKendrick's central processing unit (48) is capable of such functions as receiving a torque value input by a manual torque wrench.

Art Unit: 3721

With regard to claims 6 and 7, the modified McKendrick does not expressly state that the central processing unit receives signal from the sensor during a free air run process or receives output signal from a sensor during a rehit cycle for setting a threshold value;

McKendrick teaches that the pressurized air applied to the tool (14) is proportionally corresponds to the value of the signal delivered through the condutor (44) to the tranducer (16) (col. 4, lines 4-6), therefore, McKendrick's central processing unit (48) is capable of such functions as in claims 6 and 7.

With regard to claim 9, McKendrick shows central processing unit receives output signal from a sensor during tightening cycle, and compares output signal bench marks stored in memory; and comparing output signal bench marks stored in the memory (see col. 2, lines 30-41).

With regard to claim 20, Examiner takes Official Notice that inputting torque value using manual torque wrench with the central processing unit is well known in the art.

With regard to claim 22, the modified McKendrick does not expressly state that the central processing unit receives output signal from a sensor during a free air run process; and setting a threshold value; however, the modified McKendrick's central processing unit (48) is capable of such functions.

With regard to claim 23, the modified McKendrick does not expressly state that the central processing unit receives output signal from a sensor during a tightened fastener a rehit cycle with central processing unit; and setting a threshold value; however, McKendrick's central processing unit (48) is capable of such functions.

Art Unit: 3721

With regard to claim 24, the modified McKendrick does not expressly state that a control program is run for each fastener tightening cycle; however, the modified McKendrick's central processing unit (48) is capable of such functions.

With regard to claim 25, the modified McKendrick shows the central processing unit receives output signal from a sensor during tightening cycle, and compares output signal benchmarks stored in memory (see col. 2, lines 30-41).

With regard to claims 43 and 46, the modified microprocessor of McKendrick lacks determining invalid result caused by rehit. Lysaght teaches a microprocessor configured to identifies incomplete cycle and/or rehit (col., lines 65-67).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to provide the modified microprocessor of McKendrick with the capability of determining invalid result caused by rehit in order to correct the parameter being monitored.

Claims 3, 5, 16, 19, 21 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKendrick in view of Tambini et al. and Lysaght and further in view of Whitehouse (US 5,315,501).

With regard to claims 3, 5, 16, 19 and 21, McKendrick shows the central processing unit (48) receiving torque signal from transducer (16, 24). McKendrick fails to show transducer connected between the tool and the fastener. Whitehouse teaches a transducer (32 fig. 1) connectible between the tool (20) and the fastener (44).

Therefore, it would have been obvious to one skilled in the art to at the time of the invention to provide the apparatus of McKendrick with a transducer connectible between the tool



Art Unit: 3721

and the fastener as taught by Whitehouse in order to provide the same benefit as discussed in Whitehouse.

With regard to claim 32, the modified McKendrick shows the central processing unit (48) receiving torque signal from transducer (16, 24). The modified McKendrick fails to show transducer connected between the tool and the fastener. Whitehouse teaches a transducer (32 fig. 1) connectible between the tool (20) and the fastener (44).

Therefore, it would have been obvious to one skilled in the art to at the time of the invention to provide the apparatus of McKendrick with a transducer connectible between the tool and the fastener as taught by Whitehouse in order to provide the same benefit as discussed in Whitehouse.

Claim 10, 11, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKendrick in view of Tambini et al. and further in view of Bickford et al. (US 4,864,903).

With regard to claim 10, the modified McKendrick apparatus and method lacks an error proofing program for each fastener tightening cycle.

Bickford et al. teaches an error proofing program for each fastener tightening cycle (col. 3, lines 33-35).

Therefore, it would have been obvious to one skilled in the art to provide the modified program of McKendrick with an error proofing program as taught by Bickford et al. for each fastener tightening cycle in order to obtain the significant advantages of faster operation of the wrench, eliminate or reduce operator error, more reliable and accurate operation of the wrench to impose the desired torque on the fastening element and ability to obtain a documented history of the tightening of the fastener (Bickford et al. col.3, lines 32-37).

With regard to claim 11, the modified McKendrick does not expressly state that the central processing unit receives output signal from a sensor during tightening cycle, and compares output signal bench marks stored in memory; however, McKendrick is capable of comparing output signal bench marks stored in the memory (see col. 2, lines 30-41).

With regard to claim 26, the modified McKendrick method lacks an error proofing program for each fastener tightening cycle. Bickford et al. teaches an error proofing program for each fastener tightening cycle (col. 3, lines 33-35).

Therefore, it would have been obvious to one skilled in the art to provide the modified the program of the modified McKendrick with an error proofing for each fastener tightening cycle in order to obtain the significant advantages of faster operation of the wrench, eliminate or reduce operator error, more reliable and accurate operation of the wrench to impose the desired torque on the fastening element and ability to obtain a documented history of the tightening of the fastener (Bickford et al. col.3, lines 32-37).

With regard to claim 27, Modified McKendrick shows central processing unit receives output signal from a sensor during tightening cycle, and compares output signal bench marks stored in memory; and comparing output signal bench marks stored in the memory (see col. 2, lines 30-41). The modified McKendrick lacks method of an error proofing.

Bickford et al. teaches an error proofing program for each fastener tightening cycle (col. 3, lines 33-35).

Therefore, it would have been obvious to one skilled in the art to provide the modified program of McKendrick with an error proofing for each fastener tightening cycle in order to obtain the significant advantages of faster operation of the wrench, eliminate or reduce operator

Art Unit: 3721

error, more reliable and accurate operation of the wrench to impose the desired torque on the fastening element and ability to obtain a documented history of the tightening of the fastener (Bickford et al. col.3, lines 32-37).

***Allowable Subject Matter***

Claims 15, 31 and 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

Applicant's arguments filed 8/25/2005 have been fully considered but they are not persuasive.

With respect to claims 1 and 17, applicant argues that McKendrick fails to anticipate, teach or suggest the invention as recited in the pending claims.

The Examiner disagrees with applicant because McKendrick teaches validation of a fastener tightening cycle process based solely on a monitored signature of fluid flow versus time and/or without reference to applied torque to the fastener, See (col. 4, lines 50-59).

With respect to claim 10, applicant argues that Bickford et al. does not teach or suggest validating a fastener tightening cycle process based solely on a monitored fluid flow signature versus time an/or without reference to an actual amount of torque applied to the fastener.

The Examiner used Bickford et al. only, to teach an error proofing program for each fastener tightening cycle process as shown in the rejection above.

Art Unit: 3721

Therefore, the combination of the prior art of record disclose, teach and/or suggest the claimed subject matter of the invention as presented.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathaniel C. Chukwurah whose telephone number is (703) 308-6385. The examiner can normally be reached on M-F 6:00AM-2:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rinaldi Rada can be reached on (703) 308-2187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 3721

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NC

October 19, 2005.



Rinaldo I. Rada  
Supervisory Patent Examiner  
Group 3700